Informed consent for cord blood donation. A theoretical and empirical study

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Background and objectives. Umbilical cord blood (CB) banking and therapeutic use raise several ethical issues: medical indications, legal framework, public versus private biobanks, autologous versus allogeneic use, ownership, commercialisation, quality assurance and many others. Surrogate informed consent is one of the most notable controversial ethical issues. The aim of this study was to analyse and compare informed consent forms for CB collection, storage and use in the 18 accredited biobanks of the Italian Network.

Material and methods. The first part of the article gives a brief overview of the scientific framework, the comparison of allogeneic and autologous use and Italian regulations. In the second part the contents of the consent forms from the 18 Italian biobanks are compared with the "NetCord-FACT International Standards for Cord Blood Collection, Banking, and Release for Administration".

Results. Most of the Italian consent forms differ significantly from the NetCord-FACT Standards, with regards both to formal and substantial aspects.

Conclusion. Italian forms for CB collection, storage and use need standardisation to meet international criteria.

Key words: cord blood, informed consent, biological specimens banks, transplantation.

Introduction

The scientific framework

Until the beginning of the 1990s bone marrow was the only source of stem cells used for transplantation and leukaemia was the only disease treated by means of transplantation. In 1989 the first umbilical cord blood (CB) transplant performed by Elaine Gluckman and collaborators was described in the New England Journal of Medicine[1]. CB transplantation is now successfully used to treat myeloid leukaemia, lymphatic leukaemia, lymphoma, myelodysplasia, aplastic anaemia, haemoglobinopathies, thalassaemia, metabolic storage diseases, immune deficiency, autoimmune diseases and other diseases[2,3], both in paediatric[4] and in adult patients[5,6].

In order to provide suitable CB units for transplantation, biobanks have been developed to collect, process and cryopreserve CB. Optimal techniques are critical to ensure the appropriateness, quality, safety and potency of the transplant. Over 400,000 CB units are now stored in more than 100 public biobanks in the world[7].

Public banks collect CB that has been altruistically donated for haematopoietic stem cell transplants, similar to bone marrow donation[8].

The Italian Bone Marrow Donor Registry (IBMDR)[9], located in Genoa, participates in a worldwide collaboration with international registries to find suitable matches for patients who require a haematopoietic stem cell transplant.

Autologous use versus allogeneic use

The chance of using one's own CB is very low: estimates are imprecise but range from 1:2,500 (0.04%) to 1:200,000 (0.0005%)[10]. Patients who need a CB transplant, indeed, need cells from a donor, not their own blood cells to cure their disease. Autologous CB transplantation is not effective for clinical treatments predominantly because CB usually carries the same genetic defect as the patient's. CB transplantation cannot, therefore, be used to treat genetic diseases such as leukaemia, haemoglobinopathies, immune deficiencies and storage disorders. Moreover, a CB unit contains too few cells: usually it is suitable for a child of 20-30 kg of body weight. If the individual is heavier more than one unit is necessary.

At the moment no clinical protocol of tissue regeneration (e.g. in myocardial infarction, Alzheimer's or Parkinson's disease) with autologous CB is effective.

At present, "the most optimistic view is that there are infinitesimal chances for the clinical indication to occur where a transfusion of a child's own umbilical cord blood would be therapeutically effective (.)..It is therefore clear that currently there is no indication for transfusion to a child from preserved placental blood derived from that child's own umbilical cord. Advertisements for creating such banks are intentionally ambiguous regarding the absence of an indication and the potential future use of the properties of stem cells"[11].

Collecting and keeping a baby's cord blood may be recommended if one of the baby's parents or siblings have a disease that can be treated by CB transplantation. In all other cases donating CB to public banks is highly recommended by several scientific organisations, who have published position statements. For example, according to the French National Consultative Ethics Committee for Health and Life Sciences, "Preserving placental blood for the child itself strikes a solitary and restrictive note in contrast with the implicit solidarity of donation. It amounts to putting away in a bank as a precaution, as a biological preventive investment, as a biological insurance, whereas the true usefulness of the action in the present state of scientific knowledge, may be negligible"[11].

Despite the scientific evidence, the business of personal storage of CB has grown considerably. Aggressive marketing by banks offering private collection and storage of CB tries to convince parents to consider storing their newborns' CB for possible future use. Several scientific organisations at national and international level have published position statements discouraging autologous conservation.

The scientific arguments against autologous commercial CB banking can be summarised as follows[12]:

1. the likelihood that the stored blood will be used is very low;
2. if autologous stem cells are required they could be harvested from bone marrow or peripheral blood;
3. autologous CB may not be the best options for genetic diseases since CB cells carry the same disease;
4. alternatives to autologous CB are available for people who require transplantation (marrow from a living related donor or cells from a matched donor from a public cord blood bank);
5. arguments by commercial banks that CB could be used to treat several diseases are speculative.

Ethical issues in informed consent

In 2005 the U.S. Committee on Establishing a National Cord Blood Stem Cell Bank Program highlighted some ethical and legal key issues in informed consent for CB collection and storage[13]. Recommendations from the Committee include the need for clear policies about:

1. consent from the father ("If the blood is removed while the placenta is still in uterus, generally the mother's consent is sufficient because it is an extension of her body. If the cord blood is removed after the placenta has been taken from the mother's uterus [.] the father's wishes are also relevant." Therefore, "cord blood collection centres should have clear policies about who must provide consent");
2. timing for obtaining informed consent ("Informed consent for the collection, storage, and use of cord blood should be obtained before labour and delivery and after the adequate disclosure of information");
3. potential options and outcomes of donation ("information [.] must include a balanced perspective on the different options for banking").

Moreover, the Committee recommended adequate policies about disclosure of information regarding screening and other risks, maintenance of donors' records and patients' privacy and uses for research purposes.

Informed consent should generally cover all aspects of the collection, quality assessment, storage and release procedures. Particular attention to risks (physical, social and financial) is recommended. Most CB banks consider the mother's surrogate consent for the newborn sufficient. Some authors have argued that parents of the newborn should consent to CB donation when sensitive personal information is collected for the purpose of protecting the recipient from infectious and genetic diseases[14].

The Italian legal framework

In Italy the storage and use of CB are regulated by a specific ministerial decree, finally defined at the end of 2009[15].

The Italian regulation foresees four possible scenarios for the conservation and use of CB stem cells: allogeneic (in which the recipient is different from the donor); dedicated for newborns who suffer from a disease included in the official lists of pathologies that can be treated by haematopoietic stem cell transplantation; dedicated for families at risk of generating children affected by a disease included in the official list; autologous-dedicated in the case of pathologies at present not included in the official list but potentially curable by means of haematopoietic stem cell transplantation according to strong scientific evidence. In these conditions CB collection and storage in public biobanks are voluntary and free, that is, the expenses are charged to the National Health Service.

Allogeneic donation is anonymous. Dedicated and autologous-dedicated banking are allowed upon adequate clinical documentation.

The regulation of CB donation and use is complex and to analyse it in detail is not the aim of this article. Instead we want to delve into the issue of informed consent, which, as seen before, is essential to define the relationship between the bank and the donor, and thereby evaluate the quality of the bank's work. For these reasons we think it is useful to compare the informed consent forms currently used in Italian banks with the more recent international standards.

The NetCord-Fact International Standards of informed consent

The fourth edition of the "NetCord-FACT International Standards for Cord Blood Collection, Banking, and Release for Administration" (Standards) is a collaborative effort between NetCord, the international cord blood banking arm of EuroCord, an international registry for the European Group for Blood and Marrow Transplantation (EBMT), and the Foundation for the Accreditation of Cellular Therapy (FACT).

The mission of NetCord is to promote high quality CB banking and clinical use of umbilical CB for allogeneic stem cell transplantation, while the mission of FACT, founded in 1996 by its two parent organisations, the American Society for Blood and Marrow Transplantation (ASBMT) and the International Society for Cellular Therapy (ISCT), is to promote quality medical and laboratory practices of cellular therapy through its peer-developed standards and voluntary inspection and accreditation programme[16].

Among other recommendations, section C4 (dedicated to informed consent about "Cord Blood Donor Management and Collection Standards") of the cited Standards lists the following as essential elements of informed consent:

1. informed consent shall be obtained and documented from the mother (C4.1).
2. Informed consent shall be obtained and documented while the mother is able to concentrate on the information (C4.1.2).
3. All aspects of participation in CB donation shall be discussed with the mother in a language and with terms that she understands (C4.2).
4. The mother shall have an opportunity to ask questions (C4.3). Moreover, because of the donating shall be a free choice of the mother, she must be free to withdraw at any time.
5. Consent for at least the collection procedure shall be obtained and documented prior to delivery (C4.4), that is at a point during the pregnancy.
6. The consent must include at a minimum:
   i. an explanation of the collection procedure in terms the mother can understand (C4.4.1);
   ii. the possible risks and benefits of CB collection (C4.4.2);
   iii. the right of the mother to refuse the collection

without prejudice at any time (C4.4.3);
   iv. the mother will be approached at a later time for complete consent, including consent to process, bank, and release the CB unit for administration (C4.4.4);
   v. any services that will be performed prior to obtaining full consent to process, bank, and release the CB unit for administration (C4.4.5).
7. Prior to processing, full consent shall be obtained and documented, including the following information at a minimum:
   i. the overall purpose and participation of the mother and infant donor (C4.5.1);
   ii. an explanation of the collection procedure and activities in terms the mother can understand (C4.5.2);
   iii. the possible risks and benefits to the mother and/or infant donor (C4.5.3);
   iv. the possible alternatives to participation (C4.5.4);
   v. the right of the mother to refuse without prejudice (C4.5.5);
   vi. the intent of the donation for either unrelated use or for directed allogeneic or autologous use (C4.5.6);
   vii. if the CB unit is intended for unrelated allogeneic use, the mother shall be informed that the CB unit is a donation that will be made available to other individuals and will not necessarily be available to the infant donor or the infant donor's family at a later date (C4.5.6.1);
   viii. if the CB unit is intended for directed allogeneic or autologous use, the mother shall be informed that the release of the CB unit will be limited respectively to the family, intended recipient(s), or the infant donor (C4.5.6.2);
   ix. if the CB unit may potentially be used for reasons other than the primary intent, this shall be fully disclosed in the informed consent (C4.5.6.3).
8. The mother will be asked to provide a personal and family medical history (C4.5.7) and personnel will be permitted to review the medical records of the mother and infant donor (C4.5.8).
9. Reference samples and maternal samples will be collected for communicable disease testing, genetic disease testing, HLA typing, and other testing, as applicable (C4.5.9.2).
10. Reference samples and maternal samples will be stored for future testing (C4.5.10).
11. The CB bank will maintain linkage for the purpose of notifying the infant donor's mother or family and/or her physician of communicable or genetic diseases, whenever possible (C4.5.11).
12. The CB bank retains the right to follow up with the mother or her primary physician at a future date (C4.5.11.1).
13. Information related to the infant donor and the infant donor's family shall remain confidential and is only available for review by individuals designated by the CB bank or by national authorities to evaluate the bank (C4.5.11.2).
14. Linkage between the infant donor and mother with the CB unit shall be maintained indefinitely (C4.5.11.3).
15. Possible uses of the unit for purposes other than clinical transplantation (C4.5.12), that can include research, quality control and validation studies.
16. The bank's policies for disposal of CB units, including at a minimum:
   i. nonconforming CB units (C4.5.13.1);
   ii. directed allogeneic or autologous CB units, if no longer required (C4.5.13.2).

Materials and methods

The Italian forms

In our study we analysed the informed consent forms of the 18 biobanks accredited in the Italian public CB biobank network. The forms were obtained through the Italian National Blood Centre, in co-operation with the Italian National Transplant Centre, which is, according to the law, responsible for the organisation and surveillance of the Italian Network. The forms came from the following biobanks:

1. Emilia-Romagna Cord Blood Bank in Bologna;
2. Florence Umbilical Cord Blood Bank in Florence;
3. Liguria Cord Blood Bank in Genoa;
4. Milan Cord Blood Bank in Milan;
5. Ba.S.C.O. A.O.R.N. Santobono-Pausilipon in Naples;
6. Padova Cord Blood Bank in Padua;
7. Pavia Cord Blood Bank in Pavia;
8. SCO Bank of the Region of Abruzzo PECB in Pescara;
9. Cell and Tissue Bank in Pisa;

10. Calabria Cord Blood Bank (CCBB) in Reggio Calabria;
11. Regional Cord Blood Bank (Lazio-La Sapienza Section) in Rome;
12. Placental Blood Bank, S. Eugenio Hospital (Lazio - S. Eugenio Section) in Rome;
13. Unicatt (Università Cattolica del S. Cuore) Cord Blood Bank in Rome;
14. Cord Blood Bank of the Region of Puglia in San Giovanni Rotondo;
15. Sciacca Cord Blood Bank in Sciacca;
16. Turin Cord Blood Bank in Turin;
17. Treviso Placental Blood Bank in Treviso;
18. Verona Umbilical Cord Blood Bank in Verona.

We compared the forms from these Italian banks with the previously mentioned Standards. From a methodological point of view, when a point of the Standards is not explicitly present in the Italian forms, for example because it is considered "obvious" or "tacit", we assumed it as missing. As a consequence, a form can be formally incomplete even if used and useful in concrete clinical practice according to the substance of FACT guidelines.

Results

All 18 public biobanks have forms for general (non-specified) donation, while four banks also have a specific form for family donations, eight banks have a specific form for dedicated donations, two banks have a specific form for autologous donations and one bank has a specific form for preliminary consent. As a result, in the Italian Network 29 different forms for all possible types of donation are available. In two cases the same form can be used to give consent to a family, a dedicated or an autologous donation.

Seventeen banks explicitly require the informed consent from the mother, while in one case it is not specified who (mother or father) must sign the form. In five cases informed consent is required from both the mother and, when available, the father: within these, in one case, if the father does not sign the form, his consent is assumed as tacit, while in another case the part of consent about collection of reference and maternal samples does not require the father's consent.

The other aspects of the informed consent are listed below, with the number of banks incorporating the particular item and in which types of forms:

- informed consent from the mother able to concentrate on the information: 8 forms (5 non-specified, 1 family, 2 dedicated) from 6 banks.
- Communicate and discuss all aspects of collection and donation in terms the mother can understand: 14 forms (1 non-dedicated, 8 non-specified, 4 dedicated, 1 dedicated, family or autologous) from 8 banks.
- Possibility for the mother to ask questions: 7 forms (3 non-specified, 2 dedicated, 1 non-dedicated, 1 dedicated, family or autologous) from 5 banks.
- Right of the mother to refuse the collection at any time: 6 forms (4 non-specified, 1 non-dedicated, 1 dedicated, family or autologous) from 5 banks. In the non-dedicated form this possibility is limited to the preliminary consent.
- The consent is free and it does not cause any form of disadvantage: 5 forms (3 non-specified, 1 dedicated, 1 non-dedicated) from 4 banks.
- Consent obtained before the collection: 12 forms (6 non-specified, 1 family, 2 non-dedicated, 2 dedicated, 1 preliminary) from 8 banks.
- Exhaustive description of the collection: 9 forms (4 non-specified, 3 dedicated, 1 non-dedicated, 1 dedicated, family or autologous) from 6 banks.
- Description of all possible risks: all 29 forms, except 1 (which is dedicated), from all banks.
- Description of potential benefits: 2 non-specified forms from 2 banks.
- Description of the overall purpose of the collection: 16 forms (12 non-specified, 2 dedicated, 1 non-dedicated, 1 family) from 13 banks.
- Possible alternatives to the collection: 1 (non-specified) form.
- Specific aim of the collection (transplantation, research, etc.) not expressed: 2 forms (1 non-specified, 1 preliminary) from 2 banks.
- Transplantation's aim not specified (it could be allogeneic or autologous): 11 forms (10 non-specified, 1 non-dedicated) from 12 banks.
- Allogeneic transplantation's aim: 6 forms (4 non-specified, 1 non-dedicated, 1 dedicated) from 5 banks (in the 1 dedicated form it is specified that the transplantation will be allogeneic only if the CB is not suitable for autologous transplantation).
- Autologous transplantation's aim: 6 forms (1 non-specified, 3 dedicated, 1 family, 1 dedicated, family or autologous) from 6 banks.
- Dedicated transplantation's aim: 11 forms (2 non-

specified, 2 family, 6 dedicated, 1 dedicated, family or autologous) from 11 banks (but in 2 forms dedicated transplantation is assumed as equivalent to autologous transplantation).
- CB unit exploitable for reasons other than the primary intent, but only after further consent from the mother: 1 dedicated form.
- Mother asked to provide a personal and family medical history: 19 forms (11 non-specified, 1 family, 3 dedicated, 1 non-dedicated, 2 dedicated, family or autologous, 1 preliminary) from 13 banks (in 1 form only the maternal medical history is required).
- Right of the medical personnel to review the medical records of the mother and the family: 22 forms (12 non-specified, 2 family, 4 dedicated, 2 non-dedicated, 1 dedicated, family or autologous, 1 preliminary) from 15 banks. In 1 form the consent is only to review of the mother's records.
- Collection of reference and maternal samples at the time of donation for clinical or genetic testing: 27 forms (14 non-specified, 2 family, 6 dedicated, 2 non-dedicated, 2 dedicated, family or autologous, 1 preliminary) from 15 banks. In 2 non-specified forms from 2 banks the collection is for clinical testing only.
- Possibility to store reference and maternal samples for future clinical or genetic testing: 15 forms (2 family, 8 non-specified, 3 dedicated, 2 non-dedicated, 1 dedicated, family or autologous) from 11 banks. In 1 non-specified form the consent to storing samples is for clinical testing only.
- The hospital will maintain linkage for the purpose of notifying the infant donor's mother or family and/or her physician of communicable or genetic diseases: 3 forms (2 non-specified, 1 family) from 2 banks.
- Right of the bank to follow up with the mother or her primary physician at a future date: 8 forms (5 non-specified, 1 family, 1 dedicated, 1 non-dedicated) from 6 banks.
- Confidentiality of the medical information: all the forms except for 1 (non-specified)
- The linkage between the infant donor and mother with the bank shall be maintained indefinitely: 2 forms (non-specified) from 2 banks.
- CB unit usable for purposes other than clinical transplantation: 21 forms (16 non-specified, 2 family, 2 non-dedicated, 1 preliminary) from all the banks. In 19 forms it is written that the material could be used for other purposes only if not suitable for transplantation; in 12 forms the possible alternative use to transplantation is research; in 1 form the possible alternative use is research or validation studies; in 2 forms the possible alternative use is research or quality control; in 1 only quality control; in 5 all of them.
- The collection centre's policies for disposal of CB units are specified in 2 non-specified forms from 2 banks: in both cases it is specified that the unit will be destroyed if not suitable because of contamination.

Specific elements of Italian forms

Besides the NetCord-FACT items, a few items specific to Italian forms deserve attention:
- material for possible intrauterine therapy can be collected: 1 non-specified form from 1 bank.
- New clinical examinations will be performed after 6 months: 11 forms (8 non-specified, 1 dedicated, 1 non-dedicated, 1 family) from 9 banks.
- New clinical examinations after 6 or 12 months: 16 forms (7 non-specified, 5 dedicated, 1 non-dedicated, 1 preliminary, 2 dedicated, family or autologous) from 8 banks.
- No cost for donor: 28 forms (15 non-specified, 2 family, 6 dedicated, 2 non-dedicated, 2 dedicated, family or autologous, 1 preliminary) from 17 banks.
- No right to or advantage from the donation for donor: all forms.
- Possibility of not proceeding to the collection even though consent has been expressed: 19 forms (10 non-specified, 3 dedicated, 2 non-dedicated, 1 dedicated, family or autologous) from 13 banks.
- The CB unit will be stored for 10 years: 1 family form.
- The CB unit will be discarded or used for research if the mother does not undergo new clinical examinations after 6 months: 1 form.
- NetCord-FACT International Standards are explicitly referenced: 1 form.
- The possibility of expressing dedicated consent even after birth: the only condition is that consent must not be obtained while the mother is in labour: 1 form.

Table I - Most significant items from NetCord-FACT Standards and number of Italian banks and related forms that include them.

Items in the Standards	Banks (total 18)	Forms (total 29)
Informed consent from the mother	17	27
Informed consent from the mother able to concentrate on the information	6	8
Donation discussed with the mother in an understandable language	8	14
The mother can ask questions	5	7
Donation is a free choice of the mother	4	5
The mother can withdraw at any time without prejudice	5	6
Consent obtained and documented prior to delivery	8	12
Collection procedure explained in terms the mother can understand	6	9
The possible risks of CB collection	18	28
The possible benefits of CB collection	2	2
The overall purpose of collection	13	16
The possible alternatives to participation	1	1
The intent of the donation for either unrelated or directed transplantation	10	16
Specification of unrelated allogeneic use	5	6
Specification of directed allogeneic or autologous use	11	11
Use of CB for reasons other than the primary intent	1	1
The mother asked to provide a personal and family medical history	13	19
Personnel can review the medical records of the mother and infant donor	15	22
Collection of reference and maternal samples for clinical and/or genetic testing	15	27
Reference and maternal samples stored for future testing	11	15
The CB bank will maintain linkage for future clinic communications	2	3
The CB bank can follow up with the mother or her primary physician at a future date	6	8
Confidentiality of information	17	28
Linkage between the infant donor and mother with the CB unit shall be maintained indefinitely	2	2
Possible uses of the unit for purposes other than clinical transplantation	18	21
Bank's policies for disposal of CB units	2	2

- The donor must fill in the consent form with the help of a clinical operator, who must pass local CB bank training: 1 form.
- The family has the duty to communicate to the bank the future health of the baby: 13 forms (6 non-specified, 3 dedicated, 1 non-dedicated, 1 preliminary, 2 dedicated, family or autologous) from 7 banks. In 2 of these forms the family consents to communicate the future health of the baby only in the case of severe illness.
- Consent specified for caesarean section or natural birth: 5 forms (2 non-specified, 1 dedicated, 1 non-dedicated, 1 dedicated, family or autologous) from 3 banks.
- The donor can choose to be informed or not be informed about the results of clinical examinations: 2 forms (1 dedicated, 1 non-dedicated) from 1 bank.
- The bank adopts changeable protocols: 4 forms (1 non-specified, 1 dedicated, 1 non-dedicated, 1 dedicated, family or autologous) from 3 banks.
- Specification that the CB unit will be stored for 2 years and if the child of the donor has not needed the donated blood within this time, the CB will be made available for other patients in need, without any further consent being required from the mother: 1 dedicated form (assumed as synonymous of autologous).
- The The Oviedo Convention, the Declaration of Helsinki, and the Universal Declaration of Human Rights referenced: 2 forms (1 non-specified, 1 dedicated, family or autologous) from 1 bank.
- The donor family can request counselling with a trustworthy consultant: 2 forms (1 non-specified, 1 dedicated, family or autologous) from 1 bank.
- The legal owner of the donated unit is the Bank, but all the decisions about its use, displacement or transfer need the consent from the mother and father, or from the mother or from the child once he or she reaches 18 years of age: 1 dedicated, family or autologous form. In this same consent form, it is also stated that the unit will be stored for 20 years, but, after scientific, technical and clinical evaluations, the bank can, according to the donor's wishes, revaluate terms and time of storage.
- Declaration from midwife, physician and a witness that exhaustive information has been given and all the questions from the donors have been adequately answered: 2 forms (1 non-specified, 1 dedicated, family or autologous) from 1 bank.
- Consent to possible genetic tests (at the time of collection of the unit or later): 5 forms (3 non-specified, 2 dedicated, family or autologous) from 4 banks.

- Samples from the mother and child will be collected and stored, but it is not stated for what purpose (research, validation studies or quality control): 1 non-specified form.
- The collection will be made according to the priorities of the delivery room's staff: 3 forms (2 non-specified, 1 dedicated, family or autologous) from 2 banks.
- The family is required to communicate every address or telephone number change to the hospital for possible future contacts: 1 non-specified form.

The main results of the comparison are summarized in Table I.

Discussion and conclusions

Our analysis shows that only a few items of the FACT Standards are present in the Italian forms. This does not necessarily mean that the forms do not meet the FACT's requirements: at least two Italian banks (Milan and Pavia) are FACT accredited. No form contains all the FACT's points. Indeed, only four items are present in almost all the forms (27 or 28 of the total of 29 forms): (i) informed consent from the mother, (ii) the possible risks of CB collection, (iii) collection of reference and maternal samples for clinical and/or genetic testing and (iv) confidentiality of information. Six other items are included in more than half the forms (between 15 and 22 of the 29 forms: (i) the overall purpose of the collection, (ii) the intent of the donation for either unrelated or directed transplantation, (iii) the mother asked to provide a personal and family medical history, (iv) personnel can review the medical records of the mother and infant donor, (v) reference and maternal samples stored for future testing and (vi) possible uses of the unit for purposes other than clinical transplantation. Thus the majority of voices important, according to FACT, for obtaining consent that is truly informed are present in less than half of Italian consent forms.

On the other hand there are some specific items in Italian forms that are not included in the FACT Standards. Among them, the following seem particularly interesting.

In the forms from 17 banks it is clearly stated that there are no costs for donor, and all the banks declare the donor has no rights to or advantage from the donation; it appears important for Italian banks to clarify donors' rights and duties.

Another peculiar item of Italian consent forms is the stated possibility, when required by circumstances, to not proceed to the collection even though consent has been expressed (13 banks/18): the bank has no obligation to do it anyway. In 3 forms from 2 banks is also specified that the collection will be made according to the priorities of the delivery room's staff. It is, therefore, important that the rights and duties of the banks are also expressed.

Two forms (from the same bank) refer to the Convention on Human Rights and Biomedicine (by the Council of Europe), to the Declaration of Helsinki (by the World Medical Association) and to the Universal Declaration of Human Rights. This does not mean that the other banks disregard ethics and human rights. Actually, these documents are very general and do not apply directly to the specific case. Moreover, the Declaration of Helsinki has been developed "for medical research involving human subjects" (art. 1): although the Declaration includes "research on identifiable human material and data" (art. 1) it is not directly enforceable in the case of collection, storage and transplantation for therapeutic purposes.

Only one form outlines the problem of legal ownership of donated CB units and their duration of storage.

In general, little attention is paid to the role of the father, if not requiring his consent to the donation, at least assessing his possible objections to it.

Another important missing item is the time of informed consent, which should be given, according to FACT Standards, during pregnancy, before labour, when the mother can concentrate on information. This is probably taken for granted, like discussing the concepts with the mother in understandable language and giving her the opportunity to ask questions.

All the banks describe the risk of donating CB, but almost none describes the possible benefits or alternatives to collection (2 and 1, respectively).

In brief, the main gaps in Italian consent forms can be divided into two groups: those involving important ethical principles and those involving important formal aspects.

The former group includes:

- insufficient clarity about the "surrogate" nature of consent, since the biological owner of the cord is the child, not the mother;

- insufficient information about the possible use of CB for aims other than those declared in the informed consent, in particular for research purposes;
- insufficient information about possible genetic tests on CB;
- insufficient information about the child's rights to the CB, particularly after the age of 18.

The latter group includes:

- imprecision about confidentiality: almost all the forms state that personal data are anonymous, whereas as a matter of fact they are coded (there is always the possibility of tracing the donor);
- the impression that the forms are more a kind of permission (in order to safeguard health assistants and the bank from any legal responsibility) rather than real informed consent.

For these reasons the National Blood Centre, the National Transplantation Centre and the Bioethics Unit of the National Institute of Health are developing, in co-operation with the ITCBN, a standardised informed consent format for the collection, storage and allogeneic use of CB. For samples unsuitable for therapeutic use, the form includes the possibility of donating for research purposes. The aim is to provide all ITCBN banks with a common instrument for assessing the issues analysed above, even though every centre will conserve the faculty to adapt it to its specific situation.

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